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<NEWS>**Puffy Inherits a Habit from Her Father?**

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In August 2009, I visited Mahale after a two-year absence and stayed for two weeks. My field season was so short that I made every effort to observe as many chimpanzees as possible to catch a glimpse of behavioral changes among M group chimpanzees.

A nine-year-old female, Puffy, was one of the chimpanzees I wanted to observe most because she had lost her mother, Pinky, during the outbreak of respiratory disease in 2006¹.

Gwekulo, a sterile female, was interested in caring for infants of other females or orphaned infants. Thus, she adopted a 4-year-old female orphan Pipi in 1994 after Pipi's mother died of another respiratory outbreak in 1993², although she was also interested in a two-year-old male infant of Wakampompo. By September 1995, Gwekulo had begun to carry Primus, Puffy's elder brother, 4 years old at that time. Since then, Gwekulo had become Pinky's great partner. Pinky gave birth to Puffy in 2000 long after Primus was weaned, and Gwekulo became Puffy's earnest babysitter. Gwekulo and Pinky not only became close

friends but also formed a formidable coalition. Any group member in conflict with either of them had to fight both of them, and Pinky seemed to be one of the most dominant females of the M group.

After Pinky's death, Gwekulo continued to care for orphaned Puffy. However, after Puffy became an adolescent, Gwekulo's keen "maternal" drive was diverted from Puffy and directed more to younger infants although she continued to groom Puffy. In August 2009, Gwekulo was most interested in Xtina's one-year-old infant and cared for it whenever opportunity allowed. This baby had at least three babysitters: Puffy and the baby's elder sister, nine-year-old Xantippe in addition to Gwekulo. They transported and groomed the baby one after another. Xtina seemed to enjoy traveling without carrying a charge during many of the daytime hours.

On August 25, I was surprised to watch Puffy's behavior. When she pant-grunted to a young adult male, Orion, she touched her right nipple with her left fingers. This was the first time I observed her do so. Puffy massaged her left nipple with her right thumb and then pant-hooted for 5 seconds. She again continued this self-massage for 30 seconds (Fig. 1).

I was shocked because the way she fumbled the nipple was so much like that shown by an adult male, Alofu. He has been seen to massage his nipple since he was an adolescent male^{3,4}. He was notorious for this habit⁵ because he seemed to show this "nipple press" or "fumble nipple"⁶ whenever he appeared to be uneasy, e.g., when he pant-grunted to the alpha male or when he anticipated the approach of aggressive males. Alofu's nipple press is different from that displayed by other chimpanzees in that he showed this behavior

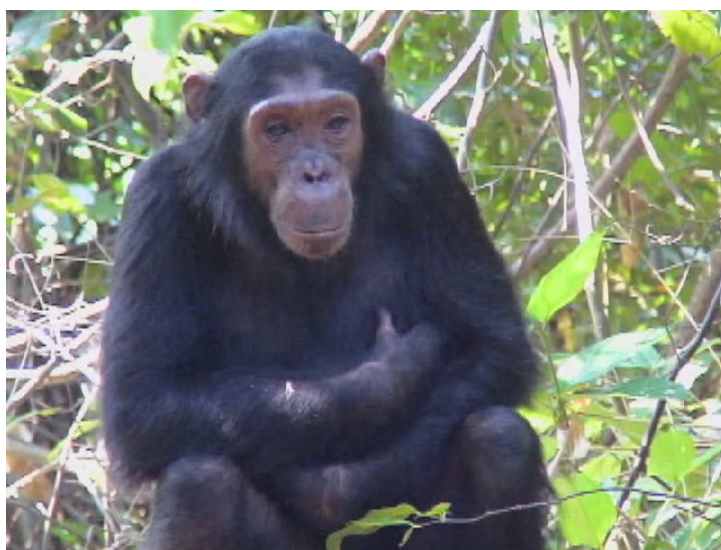


Fig. 1. Puffy, massaging her left nipple with her right thumb.

frequently every day, and his pattern was meticulous. Puffy's nipple press was as meticulous as Alofu's.

It is true that other chimpanzees also occasionally show nipple press: among adult females, Abi, Fatuma and Wakusi; among adolescent males, Pim and Xmas; among adolescent females, Qanat and Carmen (and Rubicon, according to Takahisa Matsusaka); and among adult males, Fanana. However, Puffy's action was so impressive that I hit upon the idea that Alofu might have been Puffy's father. By the way, Puffy's original closest associates, Pinky, Primus and Gwekulo, never showed nipple press.

When I returned to Japan, I asked Eiji Inoue who Puffy's father was. Eiji had collected fecal samples from as many individuals as possible and was able to clarify 11 pairs of father-offspring relationships via DNA analysis⁷. Fortunately, Puffy was one of the few youngsters whose father was clarified, and Eiji's answer confirmed my suspicion: he was Alofu! Puffy had no close association with Alofu, and the possibility of social learning from Alofu was small. Consequently, the puzzle of the similarity between Puffy's and Alofu's patterns was solved.

There were mother-offspring pairs who shared nipple press habit, for example, Pim is Fatuma's son, and Puffy's father, Alofu, is Wakusi's son. Although social learning was considered a possibility⁵ explaining the behavioral similarity, it may be that genetic influences should also be considered in these cases. Thus, the nipple press behavior seems to be at least partly genetically influenced.

On the other hand, Pim showed nipple press when he was an adolescent but ceased doing this after he became alpha male. Fanana did not show the behavior when he was alpha male, but began to show it by 2009, many years after he was dethroned in 2003. Moreover, I have never seen any infants or juveniles showing this behavior. Therefore, 9 dominance rank or self-confidence and sexual maturity also seemed to influence the emergence of the nipple press.

There is another question: did other chimpanzees' nipple press patterns spontaneously occur, without being influenced by Alofu's frequent performances, or were they influenced at least partially by Alofu? Nipple press is a simple behavior that anyone can engage in without practice, so this is a difficult question to address. When some behavior patterns seemed to be in fashion in a group, we have too often attributed it to social learning⁵. However, in the case of patterns giving physiological pleasure, we should think twice whether or not it would be more reasonable to take genetic factors into primary

consideration.

We should accumulate observational data of nipple press behavior along with the association rates of individuals as well as kinship analyses. Although an indisputable answer may not be found, we could gain a better understanding of the influences of genetic inheritance and social learning on behavioral patterns.

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